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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/677,672	10/02/2000	Jean-Christophe Francis Audonnet	454313-3160	3424

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EXAMINER	
NGUYEN, DAVE TRONG	
ART UNIT	PAPER NUMBER
1632	

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/677,672	AUDONNET ET AL.	
	Examiner	Art Unit	
	Dave T Nguyen	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The office action sent immediately prior to this office action contains incorrect information regarding the submitted priority information and the submitted graphs so as to remove the 103 rejection of record. As such, the previously sent office action (dated April 20 or 21 2004) has been withdrawn by the examiner. This instant office action will replace the withdrawn office action as a corrective action. As such, the period for response of 3 MONTHS set in said office action is restarted to begin with the mailing date of this office action.

The specification has been amended, and Claim 19 has been added by the amendment dated January 23, 2004.

To the extent that the certified copy of the French priority application FR 98 04409 is neither submitted nor present in the as-filed application, even though the translated copy of the certified copy has been submitted, applicant has not perfected right of priority as set forth in MPEP 201.14 (b), claims 1, 2, 4, 10, 11, 12, rejected under 35 USC 102(e) as being anticipated by Ross (US Pat No. 6,444,799).

Ross teaches a DNA vaccine composition comprising an adjuvant chosen from the polymers of acrylic or methacrylic acid and EMA (copolymers of maleic anhydride and alkenyl derivative) and a plasmid vector encoding a *P. gingivalis* polypeptide, *e.g.,* column 2, lines 45-67, column 5 bridging column 6, and column 6, lines 27-37. As such, Ross does teach a method of employing the adjuvant to enhance the efficacy of the

DNA vaccine *in vivo.*

Applicant's response regarding the submission of an English translated copy of the French priority application is not sufficient to overcome the stated above rejection because the certified copy of the French application has not been submitted.

The rejection over the Chavez reference has been withdrawn by the examiner because of applicant 's response on page 8 of the response.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-19 are rejected under 35 USC 103(a) as being unpatentable over any of Davis (US 2002/0164341 A1), Olsen (US 2001/0007860), or Crabb (US 5,922,237) taken with any of Miles Inc. (EP 0 532 833 A1), Lowell, Chavez, Gicquel (US 2001/0024653 A1) or Wasmoen (US 5,989,562).

Davis teaches a DNA vaccine comprising a polymer composed adjuvant (par. 0008, page 1, par. 0070-71, page 8, entire page 14. The antigen encoded by the DNA vaccine can be a pathogen antigen obtained from equine rhinopneumoonia virus, equine influenza virus, Eastern encephalitis virus, Western encephalitis virus, Venezuenlan encephalitis, rabies virus and FIV.

Olsen teaches a DNA vaccine comprising an antigen encoded DNA obtained from equine influenza virus (page 10 bridging page 11.

Crabb teaches a DNA vaccine comprising a DNA coding for equine influenza virus, equine rhinovirus coding antigen (column 21).

Davis, Olsen and Crabb do not teach an incorporation of a sugar based polymer such as EMA or Carbopol® as adjuvants in the DNA vaccine composition so as to enhance its vaccinated effect.

However, at the time the invention was made, Miles Inc. teaches a combination vaccine comprising an adjuvant preferably a Carbopol acrylic-based adjuvant is effective for use in protecting horse against EHV (entire document, abstract, page 4, lines 18-22).

In addition, Lowell teaches that polymeric adjuvant including those of polyacrylic

acid and/or polymethacrylic acid (e.g., CARBOPOL, CARBOMER), poly(methylvinul ether/maleic anhydride) copolymer, and their mixtures and copolymers in a final concentration of 0.01-0.5% (w/v) are effective for use conferring bioadhesive properties, *e.g.,* enhances the delivery and attachment of antigens on or through the target mucous surface conferring mucosal immunity (page 15).

Likewise and even in the art of DNA vaccine, wherein an expression vector is employed to express an antigen, the concept of utilizing such adjuvants are well known in the prior art, *e.g.,* see Wasmoen, column 4, Chavez, column 4, Gicquel, page 5 or par. 0057.

The art of employing an origin of replication, a promoter, and a termination sequence in a naked DNA expression vector is conventional in the prior art of constructing plasmid DNA, as exemplified by the totality of the cited prior art, and thus, is obvious to a person of ordinary skill in the art.

With respect to the main thrust of the claimed invention, drawn to a combination use of a sugar based polymeric adjuvant and a naked DNA vaccine, one of ordinary skill in the art would have been motivated to employ any commercially available polymer-based adjuvant such as EMA in DNA vaccine composition taught by the combined cited references. One of ordinary skill in the art of polymer based adjuvant would have been motivated to employ EMA or CARBOPOI rather than just making one on the basis of the teaching of the combined cited references because of the ease and convenience of obtaining the adjuvants from the prior art and because of the well-known fact obtained from the totality of the prior art, which teaches that EMA and CARBOPOL are effective

adjuvants (increasing bioadhesive property of an antigen expressed by an administered naked DNA expression vector, and ultimately an immune response to the expressed antigen) for use in any vaccination method including DNA vaccination methods, see Lowell and Wasmoen. Note also that both Gicquel and Wasmoen teaches that CARBOPOL or EMA is an effective adjuvant for use in combination with an antigen expressing vector.

Thus, the claimed invention as a whole was *prima facie* obvious.

Applicant's response (pages 9-11) has been considered by the examiner but is not found persuasive in view of the reasons set forth above. Applicant mainly argues that the concept of employing the claimed EMA and CARBOPOL as adjuvants in DNA vaccine composition is now taught any where but applicant's disclosure, and that the use of teaching from protein vaccine wherein EMA or CARBOPOL is employed cannot be the basis for the rejection. The argument is not found persuasive because Davis clearly taught that a polymer based adjuvant can be used in combination with a DNA vaccine, and to the extent that the secondary references not only teach that EMA or CARPOPOL can be used to increase bioadhesive activities of an antigen present *in vivo,* but also teach that the polymers can be used to enhance the vaccination effect of a recombinant expression vector such as mycobacteria and pox viruses (see Gicquel and Wasmoen, respectively), which acts similarly to plasmid expression vectors, one of ordinary skill in the art would have been motivated to employ a polymer based adjuvant as embraced by the claims in order to enhance the bioadhesive activities of an expressed antigen present in vivo to a mucosa, or

to increase the adjuvant property of a polymer in the DNA vaccination method of Davis. As such, applicant's citations of *In re Dow, In re Laskowski, In re Fine, In re Fritch* are not found persuasive.

The issue is mainly whether the use of such adjuvant in a naked expression vector, which is used to express an antigen, is an obvious variation from that of other expression vectors and/or antigen. The totality of the prior art of record when considered as a whole clearly provide teachings and suggestions that one would have expected that such adjuvant (EMA or Carbomer) would provide the same adjuvant effect for an antigen expressed *in vivo*. And thus, the 103 rejection remains proper and is maintained for the reasons of record.

Applicant's submission of the enclosed graphs has been considered but is not sufficient to remove the prior art rejections. While the graphs may be found convincing to remove the prior art rejection with respect to the use of CARBOPOL in combination with a particular plasmid expression vector employed in the graphs under 35 USC 103, the enclosed graphs were not submitted in a form of a proper Declaration. As such, the enclosed graphs are not sufficient as factual evidence to remove the prior art rejection of record. Note that an unexpected property of a combination use of Carpopol, and a particular plasmid expression vector, if found, may not be sufficient to be commensurate in scope with that of the presently pending claims.

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Dave Nguyen* whose telephone number is **(571-272-0731)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Amy Nelson* may be reached at **571-272-0184.**

Any inquiry of a general nature or relating to the status of this application should be directed to the *Group receptionist* whose telephone number is **(703) 308-0196**.

Dave Trong Nguyen
Primary Examiner
Art Unit: 1632

DAVE T. NGUYEN
PRIMARY EXAMINER